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JPRS Report

Telecommunications

Telecommunications

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KENYA

Nation Launches \$600 Million Telecom Plant

55000045a Kaduna NEW NIGERIAN in English
27 May 89 pp 1, 4

[Text] Kenya has opened a giant telecommunications equipment manufacturing plant costing about 600 million dollars (about five billion Naira) first of its kind in Africa.

The plant located in Gigil, about 100 kilometres west of Nairobi, will manufacture a wide range of telecoms products, including 100,000 telephones a year and operate spare parts and repair services.

The plant will also assemble and maintain telephone transmitters and antennae and switch boards for branch connections, semi-automatic electronic switch boards, answering machines and other small installations needed for the conduct of business.

Telecommunications experts in Nigeria see the Kenyan venture as a big challenge to Nigeria whose well publicised attempt to establish such facility has not gone beyond the discussion table at seminars and workshops over the years.

The view making the parts constitute about 80 percent of total production cost.

According to them, components constitute only 10 percent of final production cost in the telecoms industry.

"What is expensive," they say, "is the cost of the labour which involves highly specialised manpower (50 percent) and testing which also requires latest state-of-the-art engineering equipment."

Engineers, both at Nigerian Telecommunications Limited (NITEL), the Ministry of Communications and outside have persistently quarrelled with the policy where all sorts of telecoms equipment are imported into Nigeria without regard for standardisation.

Major suppliers of the equipment in use in the country, the NEW NIGERIAN found out, say they would balk at establishing plants in Nigeria unless they are assured of a guaranteed market, export inclusive.

The Ministry of Communications has over the years hinged its decision on this issue on the enactment of a national telecommunications policy.

Nigeria's investment of over five billion Naira in telecommunications have yielded only about 200,000 working telephone lines in the country.

TANZANIA

Belgian Firm To Provide Telecom Equipment

55000045b Paris THE INDIAN OCEAN NEWSLETTER in English 13 May 89 p 8

[Text] Belgian firm, ATEA, has just signed a contract with the authorities in Dar es-Salaam worth more than 18 million dollars for a turnkey telephone network comprising 20,000 lines with 22 telephone exchanges, radio links and new buildings. All the material supplies should be completed by 1993. Work on extending and adapting the existing network could take until 2000.

**Telecommunication Lines in Hainan Seriously
Damaged**

*HK0306045889 Hong Kong ZHONGGUO TONGXUN
SHE in Chinese 0300 GMT 26 May 89*

[Report: "Telecommunication Lines in Hainan Are Seriously Damaged"—ZHONGGUO TONGXUN SHE headline]

[Text] Haikou, 26 May (ZHONGGUO TONGXUN SHE)—In Hainan, the largest special economic zone in Mainland China, telecommunication lines have been seriously damaged. According to a source from the department concerned of Hainan Province, a total of 298 cases of damaging telecommunication lines occurred in 18 counties and cities in the province from last year till the end of April this year. Of these cases, 136

occurred during the period from January to April this year alone. Now the occurrence of cases of this kind is on the increase. The same source said Hainan Province tops the country in terms of the occurrence of cases of damaging telecommunication lines.

It is said that the high damage rate of telecommunication lines in Hainan can be attributed to three factors: 1) ineffective measures against those who damage telecommunication lines; 2) slackness on the part of the departments in charge of equipment procurement and recovery; and 3) insufficient security measures and the unsound responsibility system. In this connection, the department concerned is taking action to step up inspection of telecommunication lines and to rectify and improve administration.

TAIWAN

Indirect Phone, Postal Links Opened with Mainland

OW0806020989 Taipei CNA in English 1534 GMT 7 Jun 89

[Text] Taipei, June 7 (CNA)—The government opened telephone and postal links with the mainland Wednesday, hoping this would help mainland people learn the truth about the Tienanmen massacre this weekend.

The cabinet ad hoc committee on mainland affairs decided to open the two links via third countries [words indistinct] to maintain its "three-noes" policy of no direct contacts, talks and compromises with the Communist regime.

Vice Communications Minister Yuan Sung-hsi said people here can call their friends on the mainland via international subscriber dialing (ISD) or switchboards in a third country.

There will thus be no problems arising from sharing the bill with mainland Chinese "government units," said Yuan.

He explained that the telecommunications authorities here would complete preparations for the service within three days. "Technically there are no problems," he added.

The Communications Ministry said that one can call directly by dialing 002-86-city code-phone number, or 002-8525 can be dialed to ask the Hong Kong operator to forward the call to the mainland.

The ministry also published 77 city codes, including Peiping (1), Canton (20), Chungking (811), Nanking (25) and Harbin (451).

The opening of telephone links with the mainland also means that telex and facsimile (fax) messages can be sent to the mainland, committee spokesman Shaw Yu-ming said.

To mail a letter to the mainland, one needs just to put on the appropriate ROC [words indistinct] to drop the letter in a mail box. The Taipei air mail center will send it to the mainland via Hong Kong, explained (?Shaw).

In this way, he noted, ROC postal authorities need not conduct their mainland [word indistinct] to share postage fees.

Telecommunications officials said that according to international practices, a telephone [word indistinct] is shared by the ratio of 40-20-40 percent among the sending, forwarding an receiving countries.

In order to avoid leaving the impression of "direct contact" with the Red Chinese authorities, the ROC telecommunications authorities have never taken their 40 percent share of phone bills on calls from the mainland, they disclosed.

They expect the mainland Chinese telecommunications officials to do the same with calls from Taiwan.

INDIA

New Intelsat Earth Station Opened in Bombay

55500083 New Delhi *PATRIOT* in English 18 May 89 p 5

[Text] Bombay, May 17 (UNI)—An Intelsat standard F2 intermediate data rate (IDR) earth station 'Jawahar' atop the Videsh Sanchar Bhavan here, was dedicated today to the nation by Union Minister of State for Communications Giridhar Gomango.

The earth station will enable the Indo-American traffic to be delivered directly between the two countries without having to transit through European destinations, reducing the costs by nearly half.

This is the country's first earth station using (IDR) mode of working, which provides basic telephone circuits at 64 KBPS digital rate.

Intelsat, which had all along been passing on advantages of low cost advanced technology to member countries, has also permitted the use of its multiplexing system on IDR circuits.

With the arrangement, the actual charges payable to Intelsat per telephone channel would be reduced from US\$370 to 197 per month.

On the world telecommunication day today, an international gateway packet switch, which provides a switched data link between India and other countries, was also inaugurated by the Minister.

This system provides access to 5,000 data bases in the world and comes as a boon to software groups, who have to frequently exchange information with their counterparts in other countries.

In order to avoid inconvenience with various customers, a new technique called "Communication by laser beam," was established from the Videsh Sanchar Bhavan to the office of a national news agency here to provide a highly reliable communication up to a distance of 500 metres. The laser equipment had been made available by the Bhabha Atomic Research Centre.

Defense Laboratories Develop New Transmission Links

55500084 New Delhi *PATRIOT* in English 21 May 89 p 5

[Text] Dehra Dun—Two Defence laboratories here have developed electro-optical sensors and real-time data transmission and command links for use in remotely piloted vehicles (RPVs) to gather instant intelligence on the forward edge of battle and behind enemy lines.

The Instruments Research and Development Establishment (IRDE) and the Defence Electronics Applications Laboratory (DEAL) have produced high resolution, lightweight systems which can be put on board the

Aeronautical Development Agency's (Bangalore) RPVs to gather information for instantaneous transmission to field commanders for immediate counter-measures.

Test flights of the RPVs were conducted in 1987. Their advantage lies in that they can be remotely steered over specific segments of the battlefield and with low light television (LLTV), infrared sensors, "computer vision" devices and photographic cameras gather information and transmit it immediately to ground stations.

Besides producing real-time information, RPVs are more cost-effective, their small size ensures greater survivability than manned aircraft and even if they are shot down, the loss in terms of equipment is a fraction of the cost of a manned aircraft.

Those who witnessed the fire power demonstration at Tilpath range in March saw the high-speed reconnaissance run by a Jaguar fighter-bomber which produced a high-resolution photograph which was presented to President R. Venkataraman at the end of the 100-minute demonstration. The time-gap even in such a sophisticated environment as the Capital illustrates how long it can take to bring battlefield intelligence to the local commander. Real-time intelligence makes for quick responses, greater kill probability especially if the RPV is equipped with a laser designator to illuminate targets like tanks artillery, and therefore, greater combat mobility.

The RPV is to the land battle what the airborne warning and control systems (AWACS) aircraft is to aerial combat; the latter give real-time positions of dozens of aircraft so that both defensive and offensive air operations are more effective.

It is, in fact, a necessary part of a three-tier communications, command, control and intelligence (C³I) system of which the AWACS and the military satellite are the other essential components.

Expert Writes on India's Communications Needs

55500085 Madras *THE HINDU* in English
19 May 89 p 8

[Article by T.H. Chowdary, Chairman and Managing Director, Videsh Sanchar Nigam Limited]

[Excerpt] [Passage omitted]

Remarkable Opening Out

Every day there are 10 million international telephone calls over 170,000 international voicegrade telephone circuits, two-thirds of which are through the medium of satellites. In India, in the last three years with the

corporatisation of the former government department, the Overseas Communications Service, into the Videsh Sanchar Nigam, there has been a remarkable opening out to the world. International telephone circuits increased from 966 as of April 1, 1986 to 2,020 today.

Direct dialling has been extended from 19 to 178 countries and territories. Every day there are over 75,000 subscriber-dialled international calls going out from India and over 1,20,000 [as printed] coming into India from all over the world. The paid minutes of international conversation in India has gone up from 106 million minutes for the year ending March 31, 1986 to 223 million minutes in a matter of three years. The plain old telephones are now available in nearly every home and every office in North America (the U.S. and Canada) Western Europe and Japan. Their growth is not in the numbers alone but in the variety of services. With the convergence of computers and communications, (now called compunications) new services and new ways of doing things are stimulated.

In India, and other countries of Asia and Africa, the plain old telephone service (POTS) is yet to be extended and improved. But just as several eras of lifestyles, knowledge and ignorance and means of livelihood co-exist in our country so do several segments of the population which require ordinary as well as world class communications. About one per cent of the four million telecom customers in India generate 30 per cent of the telecom traffic and revenues and all of them (40,000) every day make more than one international telephone and one telex call. Half of them are in and around Bombay, 70 per cent in the three cities of Bombay, Delhi and Madras and 90 per cent in nine cities besides these three metros (Hyderabad, Bangalore, Trivandrum, Ernakulam, Pune, Calcutta, Ahmedabad, Amristar and Jalandhar).

Shifts in Traffic

The annual growth (over 25 percent) of India's international telephone traffic is far higher than the growth of its international trade to which it is intrinsically related. The telex traffic has a near zero growth and shows signs of decline and the telegraph traffic is declining by 10 to 15 percent a year. These shifts in international telecom traffic are in line with the technological changes in telecommunications. The telex is giving way to facsimile, or fax for short, which costs one-fifth as much as telex charges if the message to be sent is more than one page. The fax works on the telephone line itself, so one need not subscribe to a separate telex connection. If one has a personal computer, into it can be built the telex and fax facility by simply putting in two more PCBs (marketed by several companies in India already).

Electronic Mail

PCs equipped with modems and linked to the telephone lines are versatile customer premises terminals and what can be done through them depends upon the designers'

ingenuity and inventiveness. They can generate text and graphics, store and send them out to different addresses in the world at different times as programmed to take advantage of the time differences in the world's countries and also the concessional rates. They can store voice and text messages, both outgoing and incoming, and can retrieve them from stores in telecom gateways. International Electronic Mail (E-mail) is being tried out in the Videsh Sanchar's Bombay Gateway Exchange and would be available to customers before the year end. The electronic telex mail box is already under trial and voice mail boxes will be available before the year end.

Over 4,000 different data bases around the world can be accessed by the Indian customers through the Videsh Sanchar Nigam's Gateway Switching System in Bombay, operative since November 1988. The cost to the VSN for traffic to America is going down with the commissioning of an Intelsat earth station stop the Videsh Sanchar Bhavan in Bombay working with the Atlantic Ocean Region satellite and so directly carrying traffic to America (in contrast to first landing in Europe through the Indian Ocean Region Satellite and thence going through undersea cables below the Atlantic Ocean). India has direct connections with 48 countries and the links are through satellite (64 percent) and undersea cable (36 percent) two of which (under the Bay of Bengal and the Arabian Sea) are part-owned by India.

Disquieting Issues

There are certain disquieting issues which India must face and resolve. Telecommunications is trade in services. Other services traded cover finance and banking, tourism, transport, intellectual property, transportation of data. Today the balance of trade in telecommunications is in India's favour. It is earning about Rs. 100 crores a year in foreign exchange because the incoming international traffic into India is more than the outgoing one. The ratio will not continue to be favourable if India's telecommunications do not modernise and improve fast enough.

The world is moving away from telex and towards fax. In telex India has already reached a 1:1 ratio for incoming and outgoing traffic and because there are not enough fax machines to replace all the telexes, the telex traffic may become unfavourable and India may pay out foreign exchange. In telephony, the success rate for international calls emanating from India is between 40 percent and 70 percent and for all of them we pay in foreign exchange in contrast, only 28 per cent of the calls coming from all over the world into India success over the inland network. It is the incoming calls which bring foreign exchange and if the success rate does not increase, the favourable balance will diminish as is already happening. (It has come down from 2 to 1.4 now). What is needed is a policy which will increase the availability and facilitate the use of fax machines in replacement of the

telexes, and improve the transmission media and the telephone switches in the cities that produce the largest amount of international telecom traffic.

Strategic Resources

This is easy because mainly nine cities are involved and in each city only a few exchanges are involved. There must be perfect understanding and liberal attitudes so that whosoever can do best and quickly is allowed to undertake improvements. The affluent countries have realised that they have moved into the post-industrial societies wherein knowledge and information are the strategic resources and these can be most effectively stored, transported, processed and exploited over the global telecommunication ways (goods move over railways, information over telecom ways). Considering that 60 to 70 percent of the gross domestic product (GDP) in the affluent countries is in the service sector and even in the developing countries the share of services has already surpassed the primary sector and is overtaking the secondary industrial sector, it is natural that there will be growing international trade in services for which telecommunications are crucial.

Thus far, the GATT (General Agreement on Tariffs and Trade) has been concerned wholly with trade in goods but now all the affluent countries for whom the service sector is a predominant contributor to the GDP want the GATT to cover trade in services also. There was opposition mainly from 10 countries, led by Brazil and India, but finally it appears that the opposition will have to fall in line and agree to include services also under the GATT.

The services sector especially in telecommunications in all the developing countries is inefficient, overmanned and not up to the world's technological and service standards. In the global interchange of goods and services, it is unwise to talk in terms of populist concerns. It is the knowledge based efficient enterprises, the inventive and quality conscious segments of the country and the people that are involved in international trade. The international telecommunications carriers such as KDD of Japan, AT&T, MCI and Sprint of the U.S., British Telecom and Mercury Telecommunications of the U.K. and OTC of Australia are fiercely innovative and enterprising, and in association with computer companies they are ever devising new information services over the telecommunications media.

Finance, banking, insurance, knowledge extraction, patent verification and search, computer-aided design and manufacturing process control, architectural drawings, development of software are services that can all be rendered over the telecommunications media without physical transportation of humans. For example, through an automatic teller machine (ATM) located at any street corner, depositors can transact banking business—transfer funds, withdraw money and so on with a bank which may be located anywhere in the world, the

telecom network providing the link between the ATM and the computer data base of the bank. Banks are now able to move billions of dollars throughout the world electronically (electronic phase transfer) inventory control, usage and replenishment (latest practice of "just-in-time" stocks to reduce inventory costs) is another service that can be rendered for a multinational or multisite manufacturing company.

These services can be delivered through satellites to roof-top earth stations called Very Small Aperture Earth Terminals (VSATS) at the customers' premises without being impaired or limited by unreliable, congested, inadequate and imperfect domestic telecom facilities. Electronic desk-top publishing, audio and video-conferencing (cutting into physical travel) electronic mail and messaging services (cutting into courier transported mail) are telecom-based competitive services. It is not accidental that the countries with the most active and largest financial markets (in London, New York and Tokyo) are also the countries which have the most liberalised, non-governmentalised, privatised, competitive multi-entity-delivered telecom facilities and services. Netherlands, West Germany, Australia and even France and Italy are freeing telecommunications from the ageold state monopoly with a view to realising quickly the benefits of technology-driven telecommunications facilities.

Need to Catch Up

In India, Bombay, Delhi, Madras, Bangalore and a few other cities are the participants and players in the world's economic, financial and business activities. These cities cannot afford a "take it or leave it" type of telecommunications. India which is giving birth to multinationals (Oberoi Hotels, Tata Consultancy Services, Mafatlal Manufacturing, Western India Engineers, etc.) has to have world class telecommunications. Its international telecommunications being part of the global network are already experiencing the competitive pulls from a multiplicity of carriers from the same foreign country. New services like "home direct" and "international free-phone/tollfree" will have to be introduced.

Already there is considerable unease and resentment among India's partners about its slow movement, reservations and dragging of feet (for example there are 40,000 VSATS and hundreds of intra-company, multi-country data networks in the world but India is not able to formulate a general policy with which one can immediately react to proposals from international correspondents). International trade in services will be the dominant commerce of the world. It has to be so. If upwards of 60 percent of a country's GDP is going to be from the service sector, how can it remain untraded?

In an increasingly interdependent world globalisation of knowledge, of trade, of thinking, of political awareness and living and striving of people is taking place faster than tuning up of people's minds. Of all activities,

international telecommunications by tradition have been the most cooperative, coexisting and harmonious. Within the ITU also stirrings are occasioned by the world demand for trade in services to go under the GATT. Engineers alone cannot be expected to decide the regime for telecommunications—trade, planning, and financial intellectuals and leaders would rightly concern themselves with telecom issues, especially in the international sphere.

India Negotiating for Arab Nations' Spare Satellite

55500086 Bombay *THE TIMES OF INDIA* in English
18 May 89 p 6

[Text] Bombay, May 17—India is currently negotiating with the Arab nations for acquiring its spare satellite, the *Arabsat*. In an informal talk with reporters yesterday, the chairman and managing director of Videsh Sanchar Nigam Limited, Mr T.H. Chowdary, said that the Arab countries had a spare satellite which they would need only in 1992. "India and China need a satellite urgently," he said.

The talks, which according to Mr Chowdary had reached a crucial stage were now concentrating on whether the spare *Arabsat* could be sold to the International Telecommunication Satellite Organisation (INTELSAT) and used exclusively by India and China.

Mr Chowdary said that the life span of the Indian Satellite System (INSAT-1B) will end soon. The INSAT-1C did not achieve its full purpose and INSAT-1D was expected to be launched by the end of this month or early June.

Despite, the launching of the INSAT-1D we will have an urgent need for another satellite for communications purposes and it was in this context that the *Arabsat* acquired significance, he said.

He hoped that INTELSAT would be able to provide additional space to India.

Earlier speaking at a function to mark "World Telecommunication Day" tomorrow, he said that the Association of South East Asian Nations (ASEAN) was planning to launch its own satellite. The function was organised by the Institution of Electronics and Telecommunication Engineers.

He said that those satellites to be launched in 1990 would have a life-span of 14 years. The INTELSAT had so far launched five generations of satellites each with increasing capacity and versatility.

Through its 14 satellites, it was providing 114,000 voice equivalent international circuit for small and big nations throughout the world and this represented two-thirds of international traffic. Thirty-five countries were using the

INTELSAT system for domestic telecommunications. India and China were the two largest beneficiaries for the domestic communication from the INTELSAT, he said.

Referring to threats to international co-operation, he said that the developed countries of North America, Japan, western Europe, Hong Kong, Singapore and now Korea were now having more than 60 per cent of their Gross Domestic Product from the Tertiary sector part of which are services. The operation, growth and health of the tertiary sector was increasingly dependent upon telecommunications.

"Because of the convergence of computers and communications and information being the most strategic resource for any nation, to promote rapid growth and affordability, the countries in these regions were breaking up the traditional government telecom monopolies, privatising them and promoting competition. It is agreed by all these countries, that privatisation and competition alone can ensure falling prices and increasing variety of services, both of which will spur the national growth," he said.

He said that the trans-Atlantic communications traffic accounted for 55 per cent of the world's communication traffic. Growing furiously was the Pacific rim traffic between the North America, Japan, Korea, Hongkong, Singapore, Australia and New Zealand. In all these countries private companies were setting up telecom systems.

Today, in the INTELSAT there were cross-subsidies from the highly profitable Trans-Atlantic traffic to the Indian Ocean and South Pacific countries, he said.

Private companies were not interested in such type of cross-subsidies. If they posed a threat to the INTELSAT and the INMARSAT then poor countries would have to pay more or perhaps would fall out of the INTELSAT, he said.

He said that India had become a board of governors of INTELSAT.

Others who spoke included Mrs Lakshmi G. Menon, general manager of Videsh Sanchar Nigam Limited.

System Developed Using Laser Beam as Carrier

55500087 Bombay *THE TIMES OF INDIA* in English
14 May 89 p 5

[Text] Bombay, May 13—A laser beam will act as carrier of information, instead of the copper wire or light, in a telecommunication system adopted by the Videsh Sanchar Nigam.

For the "atmospheric link," the system uses infra-red rays, making communication easier for the users as there is no problem associated with cables.

The system using the laser beam to act as telecommunication carrier has been developed by a team led by Dr R. Chidambaram, director of health physics group of the Bhabha Atomic Research Centre where it is used for communication among buildings in its campus.

At present, commercial and business offices in the central business district falling within a one-kilometre radius of the Nigam at Hutatma Chowk can be linked to the new "line-of-sight" system. The range will be widened later.

How the new system works will be demonstrated when Mr Giridhar Gomango, Union minister of state for communications, visits the Nigam on Wednesday. Messages would be exchanged with a client using the laser circuit installed atop the Nigam building.

Users of the Nigam's services will be required to instal a laser detector to receive the messages, either voice or data. The laser terminal will be provided by the Nigam. Mr T.H. Chowdary, chairman and managing director, said.

He said the performance of the system would be watched till October before its installation at other overseas communications centres in the country was considered. It would be cheaper than the existing systems, he added.

There was a plan to identify about 100 buildings in the city each of which had scores of information users (voice, data, fax) generating large volumes of information and connect these bulk-users of the Nigam's facilities with international gateway exchanges using optical fibres for transportation of information.

The optical fibre connections will act as "telecommunication highways."

These measures are expected to improve services to the subscribers who depend on the local communication system to contact parties overseas through the Nigam. The Nigam had to update its equipment to keep pace with developments in the international field, though the local systems like the MTNL here had no such compulsion. The difference in technology had to be solved for greater efficiency on the Nigam's part, Mr Chowdary said.

He said a data bank would be created at the Nigam and the host computer would be linked with 5,000 data bases in the world through telecommunication channels connected to the international gateway pocket-switching system. It would enable foreign parties to get information from India, like parties from here now obtain from abroad. An instance was of a chemical firm here wanting to know whether an item was patented anywhere in the world and getting it by contacting the chemical database at Basle.

The Nigam's full-fledged gateway centre at Calcutta would be in operation by the end of this year, he said. At present, Bombay, Madras and Delhi had gateway centres.

The video conference facility would be available in the city by July. International audio conferencing facility is available in Bombay.

The earth station at Arvi near Pune would become operational by early next year, enabling shipping companies and their ships on the high seas communicate directly through the satellite of the International Maritime Satellite Organisation (INMARSAT). At present, earth stations of other countries are being used.

Mr Chowdary said only nine cities in the country accounted for 90 per cent of the Nigam's traffic. A call from India to the U.S. was 43 times costlier than one from the U.S. to India because the payment was in dollars in both cases.

The traffic handled by the Nigam was increasing rapidly. It was 22 million minutes in 1981 and was expected to be 219 million minutes by the end of this year, he said.

The Videsh Sanchar Nigam was converted into a public sector corporation in April 1986. It has only one shareholder—the President of India.

The international telephone circuits had increased from 966 to 1,906 now. International subscriber dialling was extended in 1987 to 177 countries, from 19 countries the previous year. One more country was added recently.

On its telex service, an Indian telex subscriber on IXSD has automatic access to 183 countries/territories. The Nigam also provides store and forward facility in telex service to 24 countries from Bombay, New Delhi, Calcutta and Madras. Its telegraph network facilitates automatic transmission and reception of telegrams to and from practically all parts of the world.

Transmission and reception of international television is carried out by the Nigam, among other services, including bureaufax, radio photo, international telephone conference (from Bombay, Delhi and Madras), multi-address broadcast service used by the external affairs ministry to keep in touch with consular posts, meteorological service and standard time and frequency service for the national physical laboratory.

Its new schemes include one for international free phone service in which the charges are paid by the called party, international operator direct connection service, electronic mail, electronic telex and voice mail boxes and intelcom bureaus in various cities. As the President is the lone shareholder, there is no public scrutiny of the Nigam's working. To remove the lacuna, Mr Chowdary organised a "public audit" of the Nigam's performance

yesterday, with consumers and representatives of the Consumer Guidance Society and other social organisations participating. Nearly 50 people participated.

Asked whether the Nigam still depended on the department of telecommunications, Mr Chowdary said the company needed the department's clearance for the constant updating of equipment "to be compatible internationally." It was not dependence but co-operation, he said.

Engines for Satellite Launch Vehicle To Be Tested

55500088 Madras *THE HINDU* in English
12 May 89 p 4

[Text] Trivandrum, May 11—The integration and testing of the Stage Two (PS 2) and Stage Four (PS 4) engines of the first Polar Satellite Launch Vehicle (PSLV) will be done at ISRO [Indian Space Research Organization] facility at Mahendragiri in Kanyakumari district of Tamil Nadu during June or July.

The engines were developed by the Liquid Propulsion Systems Centre (LPSC) at Valiamala near here and successfully tested individually at Mahendragiri in June last. The PSLV, India's third generation launch vehicle, is slated for lift-off in March 1990.

The LPSC Director, Dr A.E. Muthanayagam, told a group of visiting journalists that the Stage Two engine had been subjected to cumulative tests for 800 seconds and the Stage Four engine for 600 seconds so far. In the initial test conducted in June last, the engines were fired for 180 seconds. During flight, the high thrust engines are expected to operate for 150 seconds.

The major sub-systems of the PSLV, including the gas generator, turbo pump and thrust chamber, have also been successfully tested. At the integration phase, stage systems like pressurisation and gimbal control will be integrated with the stage tank and tested in two versions—the battleship version and flight version.

The PSLV is a four-stage rocket of which the first and third stages will be mobilised by solid propulsion and the second and fourth stages by liquid propulsion. Dr. Muthanayagam said liquid propulsion was adopted for two stages to give greater thrust and to put the satellite into a 900-km sun-synchronous orbit. The Polar satellite would weigh around 1,000 kg.

The Stage-Two engine, which uses unsymmetrical dimethyl hydrazine (UDMH) and nitrogen tetroxide (N2O4), was successfully developed with technology acquired from SEP, France. It was realised indigenously with the participation of Indian industries and successful testing at the Principal Test Stand (PTS) at Mahendragiri. The Stage Four engine, using monomethyl, hydrazine and N-204, is a regeneratively cooling one. It was tested at the upper stage test facility at sea-level conditions.

Dr. Muthanayagam said the assembly and integration facilities at Mahendragiri were being geared up for the stage integration and testing of the engines. A twin-bay integration tower has been erected for integration of PS 2 stage and a stage integration bay and a major assembly fixture has been realised for PS 4 stage.

The LPSC had earlier developed bipropellant engines for altitude and orbit control systems (AOCS) and Liquid Apogee Motor (LAM) for INSAT-II TS. It had also developed secondary injection thrust vector control system and monopropellant and bipropellant thruster based reaction control systems for SLV and ASLV and monopropellant hydrazine thruster based reaction control systems for SROSS and IRS satellites.

PTI reports:

Aerospace engg. unit: The Kerala Government is setting up a high-tech aerospace engineering unit in Trivandrum in collaboration with ISRO and the Defence Research Development Organisation (DRDO).

The Chief Minister, Mr. E.K. Nayanar, told reporters after a Cabinet meeting that a company called the "Kerala High-Tech Industries Limited" was being formed for the purpose. Mr. V. Sudhakar, Deputy Director, LPSC is being deputed as the Project Officer.

New Monitoring Systems for Phone, TV Transmissions

Automatic Telecom System
55500089 Bombay *THE TIMES OF INDIA* in English
9 May 89 p 14

[Text] Bombay, May 8—India's first automatic surveillance and monitoring system for long distance network, IMSS-2000, has been conceived and implemented by the Telecommunications Research Centre. This Rs 4.5-crore project was inaugurated by Mr Veer Bahadur Singh, Union Minister for communications in New Delhi last week. This is said to be the world's largest telecommunications surveillance system.

The equipment has been supplied by Wandel and Goltermann, West Germany, and installed in association with Forbes Forbes Campbell and Co.

The IMSS-2000 is part of the department of telecommunication effort to provide better communication to subscribers. At present, there are 13,600 telephone exchanges with 4.8 million lines of switching capacity and 718 cities with subscriber trunk dialling (STD) facility. International dialling is now available to 177 countries.

Improving the performance of domestic and international long distance circuits calls for computerised maintenance philosophy. The rate for success for local calls is

stated to be now 97.6 percent and for STD service 76.6 percent. The number of faults per 100 stations per month has come down to 19.7 and will be reduced to 10 during the year.

The automatic transmission and surveillance system will go a long way in improving the quality of trunk circuits to international standards. It will improve the availability of STD and ISD circuits to subscribers, minimise failures and mean time to repair by preventive maintenance and automatic fault identification, while enhancing network management capabilities as circuit data would be easily available. The system has been installed at 29 major stations throughout the country from Shillong to Cochin. The subscribers at smaller cities will also be benefitted as they are interlinked via major cities where this system has been installed.

According to Dr Freddie A. Mehta, chairman of Forbes Forbes Campbell and Co., the IMSS-2000, which has been brought into existence, thanks to the department of telecommunications, would liberate the country's telecommunication systems from the evils of faulty communication, while improving the efficiency of the telephonic network. This system, while monitoring the pulse of our transmission network, would be a useful diagnostic aid in the maintenance and upgradation of the network performance, he said.

Dr Mehta said while the hardware and software have been designed and developed at Wandel and Goltermann to suit the requirements of India, the computers at the monitoring stations have been made in India, and they have been integrated with the system software by the engineers at Forbes. Forbes is also providing the necessary backup facilities, training, the after sales service to DOT and to the various centres maintaining the network surveillance.

Mr Rank Goltermann, managing partner of Wandel & Goltermann, stated that measurement technology is an indispensable tool for high quality telecommunications. He pointed out that Wandel & Goltermann has served the field of telecommunications for over two generations right from the beginning, and its expertise has steadily continued to grow. The company is known for its precision telecommunication test equipment and for decades has been contributing towards shaping the telecommunication measurement market.

Television Monitoring System
55500089 Madras *THE HINDU* in English 8 May 89 p 3

[Text] Madras, May 7—A computerised remote monitoring and control system for testing the performance of very low-power television transmitters located in remote areas has been developed by the Designs and Development Department of the All-India Radio and Doordarshan.

According to Mr. P.K. Subramanian, Chief Engineer, Doordarshan, the sophisticated remote monitoring and control systems installed in Madras, Rajahmundry and Delhi were being tested for the past one month for monitoring the status of the very low-power transmitters installed at Karaikal and Yanam. These two places were chosen because they had subscribers' trunk dialling facility and the system could be hooked to the STD.

Mr. K.R.P. Varma, Assistant Research Engineer, Designs and Development Department, played a key role in developing this facility.

The VLPTs (two of 10 watts capacity each) had been installed in 18 places in remote islands to beam television programmes to small knots of population living there. Of these 18, there were nine in Lakshadweep archipelago, six in Andaman and Nicobar islands and the remaining three in the mainland of Karaikal, Mahe and Yanam. The VLPTs used solar energy to charge the batteries, which, in turn fed the transmitters. Since most of them were situated in remote islands, they were unattended and hence the necessity to develop the remote monitoring and control system.

Mr. Varma said the same system could be adopted to monitor the FM transmitters located at odd places.

The Doordarshan engineers have also erected a television transposer at Visakhapatnam, Mr. Subramanian said. The necessity to install a transposer at Visakhapatnam arose because some residential areas at the foot of the hills could not receive the television programmes because the hills obstructed the television picture signals emanating from a high-powered transmitter.

In Vijayawada, a part of the main town could not receive the television programmes because the Kanagadurga hill was obstructing the signals. In Tamil Nadu also, parts of Udhagamandalam town were not getting the television signals from the Kodaikanal transmitter.

The function of the transposer would be to receive the main signals from the high-powered transmitter and retransmit them in another frequency or channel so that the people living in "shadow zones" could also watch television programmes. For this, the transposer would be erected at a suitable place where it would be in line-of-sight with the transmitter. These transposers were left unattended and they were fed by solar-powered batteries.

Minister Tells Plans for Expansion of Telecom Network
55500090 New Delhi *PATRIOT* in English 4 May 89 p 9

[Text] The Department of Telecommunications had drawn up a big plan for the expansion of the telecom network in the country during 1989-90, Union Communication Minister Bir Bahadur Singh informed the parliamentary Consultative Committee attached to his Ministry in Delhi on Wednesday, report agencies.

He said it had been proposed to commission 2,111 route kilometres of optic fibre schemes, 2,060 route km of coaxial cables, 2,530 route km of microwave system and 1,835 route km of ultra-high frequency system during the year.

Mr Singh said the telex network would be expanded by adding 11,200 new lines. These would replace the 9,280 old strawger telex lines and add 1,840 lines in the telex network.

He said steps were also being taken to cover more stations by STD facility. During 1989-90, NDD/STD facility would be provided to 138 district headquarters, thus, covering all the 447 district headquarters.

During the last year, he said, 3.67 lakh new telephone connections were added, 221 new stations provided with STD facility and 90 new rural automatic exchanges commissioned. As many as 781 new telephone exchanges were also commissioned in rural areas and 43 small-capacity rural non-electronic exchanges replaced by electronic ones, he added.

Referring to the postal service, Mr Singh said the Indian Statistical Institute had been asked to design a sample survey for determining the volume of unregistered and ordinary articles handled by the post offices and the revenue earned from them.

He informed the members that the speed post service was now available in 50 cities. The department, he said, had also developed a multi-purpose electronic counter machine for use during transactions on the counters in the post offices.

During the last year, he said, 2,548 new post offices were sanctioned and efforts were made to set up post offices in very remote areas. He said for the first time some of the islands in the Andaman and Nicobar group were brought on the postal map of the country.

Meanwhile, India's first and the world's largest automatic surveillance and monitoring system for long distance network—Integrated Measuring and Surveillance System 2000(IMSS-2000), was inaugurated in the Capital by the Minister.

The Rs five crore project was conceived and implemented by the Telecommunication Research Centre.

The system IMSS-2000 would provide better communication facility to subscribers.

It would also improve subscriber trunk dialling and international subscriber dialling, minimize failures and would need less time to repair by preventive maintenance and automatic fault identification while enhancing network management capabilities.

The system has been installed at 29 major stations throughout the country. Subscribers in small cities will also be benefitted because they are interlinked through major cities.

Editorial Lauds Setting Up of Telecom Commission

55500092 *Bombay THE TIMES OF INDIA* in English
2 May 89 p 12

[Editorial: "Telecom Commission"]

[Text] Although the Union cabinet had approved the formation of the Telecom Commission in January, it has taken more than two months to name its chairman. As expected, the job has been entrusted to Mr Satyen (Sam) Pitroda, the man who led the effort mounted at the Centre for Development of Telematics (C-DoT) to design the first large indigenous digital electronic telephone exchange. Mr Pitroda's appointment took time because of opposition from both bureaucratic and political circles. It is all too easy to dismiss this resistance as the reaction of the import lobby in the telecom sector or of those unhappy with his proximity to the Prime Minister. This would mean rejecting all the critics of Mr Pitroda as motivated or subjective, while at the same time leaving unresolved the question of building new institutions like C-DoT and making them accountable. In retrospect, Mr Pitroda was undoubtedly the right choice for getting C-DoT going but this reliance upon an individual to build a new R and D institution is not a viable approach. Is the only way of making such an institution produce quick results to make it answerable to a body of its own choice—as in the case of C-DoT to the Department of Electronics (DoE)? The need, clearly, is for evolving more dependable processes of building dynamic and stable R and D institutions.

Nonetheless, the setting up of the Telecom Commission is a step in the right direction. The multiplicity of agencies planning telecom development would be done away with. The applications for industrial licences, import of equipment and foreign collaboration relating to telecom would be examined and approved by the commission. The dualism of Department of Telecommunications having to obtain the concurrence of DoE for imports would no longer obtain. No longer would it be possible to blame inter-agency differences for bypassing indigenous technology or for unnecessary imports. Mr Pitroda also faces the formidable task of restructuring, retooling and retraining the entire telecom industry. There may be resistance to change from within the telecom department where people have gotten used to taking the easier option of imports using bilateral credits instead of searching for indigenous solutions. And there may be pressures from the Telecom multinationals to the curtailment of their Indian marketshare. The Telecom Commission would have to prove that it can measure up to the challenge. Compared to what lies ahead, setting up C-DoT was a child's play.

First Punjab Remote Sensing Station Inaugurated
55500093 New Delhi *PATRIOT* in English 28 Apr 89 p 8

[Text] Chandigarh, April 27—Remote sensing is now accepted as a basic working tool in meteorology and as a tool with considerable scope in agriculture, ecology and pollution monitoring, said Punjab Chief Secretary R P Ojha while inaugurating Northern India's first Punjab Remote Sensing Centre today in the premises of PAU Ludhiana.

The Indian users have now access to remote sensing from a wide variety of sensors mounted on aircraft, foreign remote sensing satellites as well as India's own satellite launched in March last year, he added.

Mr Ojha said that the centre has purchased some remote sensing equipment, photographic and computer labs and it will help the scientists of this centre as well as the other organisations in undertaking speedily and economically the ground water studies, soil and land use mapping, land degradation studies, crop acreage estimation, crop production forecasting, forest mapping, damage detection and watershed characterisation.

While presiding over the function, Development and Financial Commissioner A S Pooni said that though the agriculture production in the State has gone up considerably there is still ample for enhancing production by way of bringing additional area under cultivation. He said that by virtue of its location at the university campus, the centre will be able to get advance scientific input from the scientists in various disciplines related to agricultural development. In turn university scientists would be able to get latest know-how from the centre as far as remote sensing techniques and their application is concerned.

Eastern Telecom Region Given More Autonomy
55500091 Calcutta *THE TELEGRAPH* in English
4 May 89 p 10

[Text] Calcutta, May 3 (PTI)—The eastern telecommunication region has been given greater autonomy and has been reorganised into an independent result oriented profit centre effective from May 1, 1989, according to official sources.

Sources said that the reorganisation will give it greater flexibility in operation and maintenance of long-distance transmissions.

One of the important aspects of the reorganisation, according to sources, is linking of the performance of the long-distance circuits like telecom circles, telephone districts and private leased subscribers on national basis.

Sources said that the maintenance region will be responsible for high performance of circuits to the end users.

The apex body of the reorganisation will be under the eastern telecommission region board with the chief general manager as its chairman, sources said.

The CGM will be given adequate administrative and financial powers to maintain effectively the affairs of the telecommunication services under his jurisdiction, according to the sources.

He will be responsible for drawing up a perspective as well as annual operation and maintenance plan for this region with allocation of resources indicated by the telecommunicator board.

Sources said that Mr Pradhan A. Saran has assumed charge as the chief general manager from May 1, 1989.

He will be assisted by a general manager, internal finance advisor and a director or deputy general manager as members of the board.

According to the sources, the eastern telecommunication region of the department of telecommunication with its headquarters at Calcutta is at present responsible for the maintenance of all long-distance transmission system such as coaxial, microwave, satellite and trunk automatic exchange in West Bengal, Bihar, Orissa, the north east and the Andaman and Nicobar Island.

IRAN

Telephone Network Expanded
55004708 Tehran *KAYHAN INTERNATIONAL*
in English 20 May 89 p 2

[Text] Tehran, May 19 (IRNA)—The Minister of Post, Telegraph and Telephone Mohammad Gharazi announced Wednesday that the nationwide telephone network covers more than 540 towns and cities in Iran now, while the number was only 70 before the victory of the Islamic Revolution (1979).

Speaking on the eve of International Communication Day (May 18), the minister said, before the revolution only 300 villages had telephone services, but the number has exceeded to 4,000 today.

Iran has direct international telephone links with 137 countries, he said, and stated that currently telephone subscribers throughout the country numbered 1.7 m.

During the first five-year plan (to begin this year) the number of telephone subscribers would rise to 4m. Plans are under way to reach the 12m mark, twelve years from now, Gharazi said.

Belorussia To Receive Yugoslav Television
18070666 Minsk *SOVETSKAYA BELORUSSIYA*
in Russian 5 May 89 p 1

[BELTA item: "Contacts Are Growing Stronger"]

[Text] The republic's television viewers will be able in the near future to regularly see reports of Belorussian and Yugoslav journalists from Slovenia. There was discussion of this and other forms of mutual contacts at a meeting of executives and employees of the Belorussian Soviet Socialist Republic [SSR] State Committee for Television and Radio Broadcasting [Gostelradio] and Ljubljana Television. The basis for such cooperation was laid three years ago, at the time of the Days of National Cultures, when the first exchange of delegations and of television and radio programs was also set up. Today it has been decided to significantly expand the ties and to make them permanent.

Finnish Firm To Set Up Moscow Mobile Phone System
55002465 Helsinki *HELSINGIN SANOMAT* in Finnish
15 Jun 89 p 36

[Text] Telenokia and the Moscow Municipal Telephone Authority have gone together in a joint venture, under the name AMT, which will offer mobile telephone services in the greater Moscow area. The system's services have mainly been planned for international companies and the diplomatic community. Construction on the mobile phone network is to commence by the end of this coming autumn, and is to be completed by spring of 1990. In future, the joint firm will also set up a paging service, as well as offer other voice and data-transmission services. Telenokia will own 40 percent of the AMT company, and the Soviet partner the other 60 percent.

CANADA

Task Force Seeks New Regulatory System for Industry

55200036 Toronto *THE GLOBE AND MAIL*
in English 24 May 89 p B5

[Text] Canada needs a single policy maker and a single regulator for telecommunications if all its industries are to be internationally competitive, says a task force drawn from some of the country's biggest telecommunications carriers and users.

The existing "patchwork" system, which splits regulation between the federal and provincial governments, is not suited to the realities of the twenty-first century, the task force, set up by the Information Technology Association of Canada, says in a policy paper released yesterday at a press conference in Toronto.

As a result, the association says, the current regulatory regime is a direct threat to the international competitiveness of Canadian companies. And this is at a time when the free-trade agreement between Canada and the United States, as well as changes in the General Agreement on Tariffs and Trade, are creating pressure for Canada to "maximize the comparative advantage" provided by its telecommunications infrastructure, which is "among the best in the world."

One way in which the current system creates anomalies, the policy paper says, is that information technology suppliers are prevented from selling products used in connection with the public telephone network in provinces that prohibit the connection of customer-owned equipment to the phone system.

"Information technology suppliers who offer enhanced services in British Columbia, Ontario and Quebec are prohibited from making them available in the same manner in most of the other provinces," the paper says.

The association, whose more than 60 member companies have combined annual revenue of about \$27-billion, is calling on Ottawa and the provinces to create a single national tribunal to supervise all telecommunications undertakings.

The tribunal's members could be selected by both federal and provincial authorities, thus safeguarding provincial and regional interests, the association says.

Kenneth Copeland, incoming chairman of the association and president of Digital Equipment of Canada Ltd., a Toronto-based subsidiary of Digital Equipment Corp. of Maynard, Mass., said he thinks it is significant that the association's members, who have competing interests in some cases, have unanimously endorsed the recommendation.

Members of the task force were drawn from companies such as Digital, Bell Canada, British Columbia Telephone Co., CNCP Telecommunications, IBM Canada Ltd. and Xerox Canada Ltd.

Brian Hewat, Bell Canada's executive vice-president for marketing, described the domestic Canadian market for telecommunications as "one of the most balkanized environments imaginable."

He said that long-standing talks on telecommunications regulation and policy making between federal and provincial governments do not seem to be coming to any conclusion, but he warned that the governments might end up imposing a political solution that would not be good for business.

The association wants to add a business perspective with its policy paper, Mr Hewat said.

Graeme Hughes, association president, said ITAC will send the policy paper to governments and will be interested in their reactions. "They need to hear what major users and suppliers of telecommunications are saying," he said.

Mr Hughes also said in response to a question that rather than trying to determine what role the Canadian Radio-Television and Telecommunications Commission might play in the scenario, the task force had "tried to wipe the slate clean and say what would be the best solution."

Cable Firms To Pay Fee for Carrying U.S. Shows

55200034 Toronto *THE TORONTO STAR* in English

11 May 89 p A3

[Article by Rosemary Speirs]

[Text] Ottawa—Another link in the Canada-U.S. free trade deal was forged yesterday with Communications Minister Marcel Masse's announcement that for the first time Canadian cable companies will have to pay royalties for retransmitting "distant" (mostly American) television and radio shows.

The issue has long been a sore point with American broadcasters who pressed the U.S. administration to crack down on Canadian cable companies re-using their product for free.

Canadian cable companies operated under a 1954 Canadian court ruling that held that retransmissions of television and radio shows were not protected by the Copyright Act. The ruling allowed what the Americans considered was pirating of their shows.

The issue was settled by the free trade negotiators in the Americans' favor and the final legislation provided for the filling of proposed royalties by July 1 of this year.

Hearings will be held before the Copyright Board and the new compulsory fees will be in place by 1 January.

Pass on Costs

"I think Canadian consumers lost," Janet Yale, general counsel for the Consumers' Association of Canada, told Canadian Press yesterday.

She said cable companies will pass on the costs to their customers in higher cable bills.

During Parliamentary debate on the issue, experts estimated the royalties could total \$12 million a year, of which "80 per cent will flow to the U.S.," Liberal communications critic Sheila Finestone said.

Finestone added, however, that she believes it is "only fair" that U.S. as well as Canadian artists should be remunerated for retransmissions of their performances.

"There's no question most of the moneys will flow to American artists, but it is not fair to avoid that payment," Finestone said.

The new regulations, which follow amendments in February to the Copyright Act to deal with retransmission rights, define what is a "distant" radio or television signal on which royalties will have to be paid.

Generally, the definitions correspond to the "outside limit of the natural coverage" of radio and television stations.

This means that Canadian performances retransmitted outside their local area will also be subject to royalties, but most of the change will be felt by cable companies retransmitting popular U.S. shows from across the border.

Massé said in his news release that, to be fair, the distance definitions in his regulations will parallel those used in the United States, so that both Canadian and U.S. cable companies will have to pay royalties for signals that go beyond local station areas.

Under the new regulations, cable companies will have to hold compulsory licences, which will allow them to retransmit programs or performances without seeking the "rights-owners' permission," providing they pay "equitable remuneration."

Those will be the royalties set by the Copyright Board after its hearings this fall.

Finestone said she doesn't like the idea of higher cable costs for Canadian cable customers, but, after all, American artists are entitled to be paid.

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